GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station
Atlanta, Georgia

SEMI-ANNUAL STATUS REPORT NO. 6

Reporting Period: 1 March 1965 through 31 August 1965

Grant No. NsG-304-63
Georgia Tech Project No. A-652

Grant Objective: Theoretical and Experimental Studies of High Altitude Chemical Releases, Using Digital Computing, Photochemical and Spectrophotographic Analyses

Grant Sponsor: National Aeronautics and Space Administration
Washington 25, D. C.

Principal Investigator - Howard D. Edwards

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Project A-652

Summary of Project Work

Research Activities

1. Study of upper atmospheric winds and wind shears has continued. Work has been started on compiling and averaging several characteristic parameters of these winds and shears. Overall averages and seasonal and diurnal variation of the average values are being considered. It is hoped that this work will lead to a publishable article on the general properties of upper atmospheric winds. Work has also begun on analysis techniques which will attempt to determine the gravity wave and tidal components of the observed upper atmospheric winds.

2. Additional work on turbulence has been done. A series of articles is in preparation for submission to J.G.R. These will update the earlier report entitled "Turbulence in the Upper Atmosphere."

3. Although progress is continuing in the diffusion work, diffusion coefficients are not yet determined on a routine basis. Improvements in computer programs and use of newly acquired data reduction equipment are expected to increase progress in this area.

Publications

(1) "Atmospheric Oscillations," Aileen Lineberger and H. D. Edwards. This report has been accepted by NASA for announcement in STAR.

(2) "A Triangulation Technique for Linear Objects in Space," H. P. Haney, W. M. Schofield and W. H. Wooten, is to be published in the November issue of the Journal of Photogrammetric Engineering.

(3) "Space and Time Correlations of Ionospheric Winds," N. W. Rosenberg and C. G. Justus, has been submitted for publication in J.G.R.

(4) Three or four articles on "Turbulence in the Upper Atmosphere" are in preparation for submission to the Journal of Geophysical Research. The areas covered are: I. Energy Balance, II. Shear and Energy Spectrums, III. Characteristic Scales of the Motion and IV. Criteria for the Onset of Turbulence.

Staff Employed

The following staff and faculty members have been employed.

Mr. M. M. Cooksey	Zane Frentress
Dr. H. D. Edwards	Dr. W. M. Schofield

The following graduate students have been employed.

E. T. Anderson	A. J. Lineberger
J. F. Cooksey	W. B. Moseley
H. P. Haney	A. Woodrum
C. G. Justus	W. H. Wooten
I. Kon	

The following undergraduate students have been employed.

E. C. Baxter	P. R. Carlson
E. R. Beeman	J. Goodpasture
W. Brock	

Plans for Next Period

Staff Changes - Two new staff members will be added during the month of September.

(a) Dr. R. G. Roper, who has done outstanding work on both theoretical and experimental aspects of upper atmosphere turbulence, wind shears and diffusion, comes to us from Goddard Space Flight Center where he has been for the past 15 months.

(b) Dr. C. G. Justus, who has recently completed all work for the Ph.D. in Physics at Georgia Tech joins the staff as an Assistant Professor.

Dr. W. M. Schofield resigned, effective 1 July 1965, to return to industry.

Research Activities - With the addition of Dr. Roper and Dr. Justus to the staff, theoretical studies and analysis of data on turbulence, wind shears and diffusion will be considerably expanded.

Several rocket firings of chemicals are planned in November by the AFCRL as a part of the IQSY program. These firings should provide considerable new data for analysis.

With the transfer of research activities from the Engineering Experiment Station to the School of Aerospace Engineering almost complete, plans are underway to initiate several new courses and increase the association between the research activities and teaching.

Respectfully submitted,

Howard D. Edwards

Howard D. Edwards
Principal Investigator
Director, Space Sciences Laboratory